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ABSTRACT

Several studies have shown the value of categorization schemes such as the DeSanctis and Poole (1994) typologies of appropriation moves in illuminating aspects of technology adoption and use (e.g. Poole and DeSanctis, 1992; DeSanctis, et al, 1993; Chudoba, 1999). The DeSanctis and Poole typology has served as both sensitizing categories for the recognition of appropriation moves and as a tool for organizing observed appropriation moves for interpretation and analysis (Chudoba, 1999; Miller, under review). Such analyses have provided important insight into patterns of adoption and use of technology within groups. Recent study however, has shown the value of analysis that delves deeper into the complexities of appropriation moves and illuminates aspects of appropriation that analysis of the types of appropriation moves alone does not reveal (Miller, under review). In particular, research has shown that determining the initiator of an appropriation move (the source) and the person or group towards whom the move is directed (the target) offers greater understanding of the nature of appropriation moves and reveals patterns of appropriation not apparent from analysis of the types of appropriation moves. Building on that research, this paper suggests a coding scheme that identifies and categorizes the source and target in appropriation moves. This coding scheme complements the DeSanctis and Poole (1994) appropriation move typology. When combined with the appropriation moves typology, the source-target scheme provides a ready means for organizing observations for analysis of an important aspect of group interaction and technology adoption and use.

Keywords

Adaptive structuration theory, appropriation, appropriation moves, group support systems

INTRODUCTION

Researchers have been working to understand the issues involved in the adoption and use of information technologies, particularly the technologies that directly affect how individuals interact with others, and interact within groups and within organizations. Many theories have been advanced to explain the effects of such technologies in social interaction. Many theories were highly deterministic arguing that technologies had a direct, causal influence on social behavior or highly voluntaristic, claiming that these same technologies had no causal effect because the actors in social interaction determine what effect the technologies may have (DeSanctis and Poole, 1994). Some scholars (e.g., Orlikowski, 1992; DeSanctis and Poole, 1994), seeking a theoretical pathway between these extremes, have considered structuration theory (Giddens, 1984), in which social structure both organizes social action and is emergent through interaction, as a basis to better explain the influence of technology in social interactions. Within the theoretical context of structuration, DeSanctis and Poole (1994) have developed and advanced Adaptive Structuration Theory (AST) as an alternative, social technology perspective on technological influence in social interaction in which technology has structures that may influence social interaction, but the effects technologies have on behavior are moderated by social practices. Since its inception, AST has become an important theoretical perspective for understanding the processes of technological appropriation in the workplace.

A central concept of AST is appropriation (DeSanctis and Poole, 1994), which is the process of adopting and using technology in social interaction and that examination of patterns of appropriation will reveal the deeper structures of technology adoption and use. The instance of an actor calling upon a structural property of a technology is an act of appropriation of the technology, or an appropriation move. AST posits therefore, that technologies have a potential to structure social interaction, but it is only in their use that these technologies have impact on social process outcomes. Epistemologically, it is only in observing actual appropriation of the technologies that its impact on social process can be determined (Orlikowski, 1992; DeSanctis and Poole, 1994; Orlikowski, 2000). As an operationalization of AST, DeSanctis and Poole (1994) outlined and illustrated an analytical strategy for studying the effect of technologies in social interaction, wherein they identified discrete appropriation moves by actors to adopt and incorporate structures of advanced information

technologies. From a study of eighteen computer-supported decision groups, they derive a categorization scheme for appropriation moves (see Poole and DeSanctis, 1992). Schemes such as this can provide sensitizing concepts (Blumer, 1969; Bowen, 2006; Poole and DeSanctis, 1992) in support of observational studies of appropriation. As sensitizing concepts, the categories can provide a general sense of reference and serve as a guide in empirical cases (Blumer, 1969). Once appropriation moves have been identified, their categorization in the scheme aids further analysis of group processes (Chudoba, 1999; Miller, under review).

Despite the obvious usefulness of the categorization scheme, there is little evidence of its direct application in research into technology adoption and use. The scheme has been directly applied in only one study (Miller, under review) beyond the one in which Poole and DeSanctis (1992) introduced the scheme. The Miller (under review) study is of researcher-observed videotapes of forty-eight four- or five-member groups that had been introduced for the first time to group decision-making techniques and group support system (GSS) technology. The DeSanctis and Poole (1994) appropriation moves scheme served to sensitize the observer to the occurrence of an appropriation move, with comparisons of counts of the annotated and coded moves used as the basis for analysis. That study found, however, that the analysis of the counts of various types of appropriation moves did not adequately describe the technology appropriation observed in the social interaction. That study suggested that analysis of the initiator of an interaction that is an appropriation move and person or people to whom the move is directed provided insight into the nature of appropriation moves that was not apparent from analysis of the type of appropriation move alone. While the Poole and DeSanctis (1992) study recorded the initiator of appropriation moves, this is the first attempt to note to whom the move was directed. This articles builds on the discovery found in the Miller (under review) study to introduce and illustrate a coding scheme which identifies the initiator and intended recipient of individual appropriation moves.

BACKGROUND

The Miller (under review) observations are of participants in small facilitated decision groups exposed to a GSS taken from a tightly controlled laboratory environment. Measures had been taken in conducting the experiments to reasonably assure consistent group composition, training and task environment, reducing variation to random sampling. There was only one area of designed difference in the group sessions and that was that the groups were equally divided into high- and low-imposed structure environments. Twenty-four groups were directed through the decision task using the GSS while the other 24 groups were left to decide on their own to use or not use the GSS for task completion. Another structured variation introduced into the design, but not expected to affect appropriation was that two individuals hosted the various group sessions, provided the training in group decision techniques and use of the GSS as well as facilitated (in the case of the high-imposed structure environment) and chauffeured (in the case of the low-imposed structure environment) the decision task that was the focus of the appropriation moves analysis. Personality differences between the two individuals serving in this capacity were expected to be negligible since their actions were tightly controlled through scripting of their activities.

Table 1 reports the counts of appropriation moves observed in the Miller (under review) study, by imposed structure. In all, there were 1097 appropriation moves observed and the predicted finding that there would be substantially more appropriation moves in the low-imposed structure groups was supported. Of note for this paper though, is the comparatively similar counts between the imposed structure environments for many of the subtypes of appropriation moves related to constraining the structure—(Sub)types 6a, 6b, 6e 6g, and to some extent, 6f. The question became whether the similarity of the counts represented a similarity in the nature of the appropriation moves.

While the differences in the imposed structure environments were expected to result in different quantities and types of appropriation moves, there were no predicted differences in counts of appropriation moves related to the individual hosting the sessions. Nevertheless, as shown in Table 2, there were differences among areas within treatments yet between session hosts Desmond and Emmett (aliases used in the original), resulting in differences in the counts of occurrences in appropriation moves. Of particular interest in this article are the areas of substantial differences between the session hosts for (Sub)types 6a and 6f of the high-imposed structure environment and 2c, 3b, 6a, and to a somewhat lesser extent, 8b of the low-imposed structure environment.

METHOD

The method applied in this case was straight-forward and pretty simple yet provided a means to more deeply analyze individual appropriation moves as well as aggregate (count) appropriation moves. The first step was to identify all of the entities that were involved in the observable interactions, of which there were three. One entity is individual group members participating in the decision task. Each group member had a role to play in the task and was an integral part of the decision room environment. Another entity is the session host. Whether acting in the role of facilitator (high-imposed structure) or

chauffeur (low-imposed structure) the session host was, along with the individual group members, an integral part of the decision room environment. Additionally, the fulfillment of the imposed structures was handled entirely through the behavior of the session host. This made the session host's behavior critical to the observed environment. The final entity is the group. The group has an identity in its own right that is neither the sum of the members nor can be separated from the members (cf. McGrath, 1984). At the very least, it should be readily apparent that an individual can direct a comment or other action (gesture) at a group without necessarily directing the comment to individual members of the group or the session host.

(Sub)Type*	High-Imposed Structure	Low-Imposed Structure	Total
1a. explicit direct appropriation	6	82	88
1b. implicit direct appropriation		40	40
1c. bid direct appropriation	1	92	93
2a. part substitution		4	4
2b. related substitution	2	13	15
2c. unrelated substitution	3	69	72
3a. composition combination	7	14	21
3b. paradox combination	12	32	44
3c. corrective combination	4	11	15
5b. favored contrast	1	3	4
5c. none favored contrast		3	3
5d. criticism contrast		2	2
6a. definition constraint	82	90	172
6b. command constraint	33	23	56
6c. diagnosis constraint	5	17	22
6d. ordering constraint	8	52	60
6e. queries constraint	53	79	132
6f. closure constraint	36	72	108
6g. status report constraint	17	26	43
6h. status request constraint	4	23	27
7a. agreement affirmation	2	3	5
7b. bid agreement affirmation	4	20	24
8a. reject negation	1	6	7
8b. indirect negation		24	24
8c. bid reject negation		12	12
9. neutrality		4	4
Total	281	816	1097

Table 1. Counts of Appropriation Moves

*for (sub)types of appropriation moves for which there are recorded occurrences.

Having identified the entities, at least in this interaction scenario, the next step was to determine possible combinations of the initiator or source of the interaction and to whom the interaction was directed or the target of the interaction. In the end, it was decided that any of the three entities could be the source or target of the interaction. While it is readily apparent that one individual can be the source of a comment or gesture of social interaction directed towards another individual, or towards a group as the target of that interaction, it is less apparent that a group could be the source of an interaction. As viewed within the context of this preliminary analysis of source and target of appropriation moves, it is considered possible that a group can initiate an interaction. Within the observable interaction of this study, it was difficult at times to determine the origin of a comment or even which of a collection of comments was the initial utterance or gesture of interaction that was the appropriation move. This difficulty was exacerbated by the note-taking method of the previous study that at times attributed comments to "the group." Therefore it was deemed possible within the context of this analysis that a group could initiate an interaction that was the appropriation move. The possible combinations of source and target of interactions that are appropriation moves are given in Table 3.

(Sub) Type	High-imposed Structure			Low-imposed Structure		
	Desmond 12 sessions	Emmett 12 sessions	Absolute Difference	Desmond 14 sessions	Emmett 10 sessions	Absolute Difference
1a.	4	2	2	34*	35	1
1b.				17	16	1
1c.	1		1	41	35	6
2a.				3		3
2b.	2		2	4	8	4
2c.	2	1	1	33	22	11
3a.	1	6	5	6	6	0
3b.	2	10	8	18	7	11
3c.	3	1	2	6	3	3
5b.	1		1	1	1	0
5c.				1	1	0
5d.				1	1	0
6a.	56	26	30	31	46	15
6b.	20	13	7	8	12	4
6c.	5		5	6	8	2
6d.	4	4	0	21	22	1
6e.	24	29	5	35	30	5
6f.	24	12	12	29	32	3
6g.	9	8	1	9	13	4
6h.	2	2	0	7	13	6
7a.	2		2	1	2	1
7b.	2	2	0	9	8	1
8a.		1	1	3	2	1
8b.				14	5	9
8c.				5	5	0
9.				2	1	1
Total	164	117		344	334	

Table 2: Facilitator/Chauffeur Counts of Appropriation Moves

*Values are weighted (deflated and rounded to the nearest whole number) to compensate for the difference in the number of sessions that were chauffeured.

Source	Target	Interaction	Code
Session Host	Group Member	host-to-member	H2M
Session Host	Group	host-to-group	H2G
Group Member	Group Member	member-to-member	M2M
Group Member	Session Host	member-to-host	M2H
Group Member	Group	member-to-group	M2G
Group	Group Member	group-to-member	G2M
Group	Session Host	group-to-host	G2H
Group	Group	group-to-group	G2G

Table 3. Source/Target Coding

The next step was to assign a source/target code to each appropriation move noted in the study. All 1097 appropriation moves from the Miller (under review) study were reviewed with a source/target code assigned to each one. These codes along with other data of the appropriation move event were then imported into a spreadsheet from which pivot tables were created to provide summary counts of the appropriation moves in combinations of imposed structure, session host, (sub)type

of appropriation move, and of course, the source and target of the appropriation move. These summary counts were then used for further analysis.

FINDINGS AND DISCUSSION

Many qualities of the appropriation moves emerged from analysis of the source and target of appropriation moves that were not revealed from an analysis of (sub)types of appropriation moves alone. Analysis by the source and target revealed dissimilarity in the nature of appropriation moves that constrained the structure (Type 6) where there was similarity in the counts of appropriation moves between imposed structures (refer to Table 1). Table 4 provides counts of combinations of sources and targets of the constraint types of appropriation moves discussed above. Other summary data provided in this table show counts for each (sub)type of appropriation moves listed for those combinations of sources and targets in which the host was the initiator of the move (Host Init. and HostInit%) or where the host was not involved in the move (No Host and NoHost%). As can be seen in this data, the nature of the appropriation moves occurring between the two imposed structures is quite different despite the similarity in the counts of appropriation moves.

	High-imposed Structure					Low-imposed Structure				
	6a	6b	6e	6f	6g	6a	6b	6e	6f	6g
H2M	28	3		1	1	6	1	2		
H2G	48	20		20	8	9	3			11
M2M	6	3	2			13	7	5	6	4
M2H			47	4	2	4	2	45	3	4
M2G		7	2	9	4	48	10	26	54	7
G2M						2		1		
G2H			1	1					1	
G2G			1	1	2	8			8	
Total	82	33	53	36	17	90	23	79	72	26
Host Init.	76	23		21	9	15	4	2	0	11
No Host	6	10	5	10	6	71	17	32	68	11
HostInit%	93%	70%		58%	53%	17%	17%	3%	0%	42%
NoHost%	7%	30%	9%	28%	35%	79%	74%	41%	94%	42%

Table 4. Source and Target of Constraint Appropriation Moves

In the high-imposed structure groups, the facilitator was the source of most of the Type 6 appropriation moves with a group or individual members of a group as the targets of the interaction. The facilitator was the initiator of a majority of the appropriation moves that explained the meaning of a structure or how to use it (Subtype 6a), directed a group or group member to use the structure (Subtype 6b), showed how use of a structure had been completed (Subtype 6f), or reported what was done or was being done with a structure (Subtype 6g). The facilitator was the target in a majority (90%) of appropriation moves that were queries about a structure's meaning or how to use it (Subtype 6e), with a group or individual group member as the source of the interaction. By contrast, in low-imposed structure groups, appropriation moves constraining the structure (Type 6) were almost all initiated by a group or individual group member. These appropriation moves were targeted to the group in general, other group members, or the chauffeur. The constraint type of appropriation move occurred most often as a group was grappling with the structures of the GSS or other structural aspects of the group decision process. In all instances, the source of an appropriation move was struggling to understand and give meaning to the structure in use. While in the high-imposed structure sessions the facilitator was in a position to provide guidance and describe the structure in use, in the low-imposed structure sessions the chauffeur was not permitted (by the design of the study) to provide such guidance. Therefore, the group members of the low-imposed structure had to determine among themselves the meaning of the structures in use.

Table 5 contains counts of combinations of sources and targets in high-imposed structure sessions hosted by Desmond, while Table 6 contains the same data for sessions hosted by Emmett. Similarly, Table 7 contains combinations of sources and targets between the low-imposed structure environment for selected (sub)types of appropriation moves (see above) for sessions hosted by Desmond, while Table 8 contains the same data for sessions hosted by Emmett. While the findings expressed here are more subtle than the results indicated for the differences in imposed structures, differences are revealed

that were not apparent from analysis of the (sub)type of appropriation move alone. For example, in the high-imposed structure sessions, it is clear that Desmond defined the structure to the group and individual members of the group, more than did Emmett and this difference makes up a substantial proportion of the difference in total counts between the hosts. Another comparison of host differences in the high-imposed structure environment shows that, though the total number of appropriation moves sourced from a group member targeted to the session host was similar for Desmond and Emmett, as a percentage of the total counts for each session host, this source and target combination occurred substantially more in sessions hosted by Emmett than by Desmond (26% versus 17%, respectively).

	Combinations of Source and Target							
Type	H2G	H2M	G2H	G2G	M2H	M2G	M2M	Total
1a	3						1	4
1c						1		1
2b	1					1		2
2c				1			1	2
3a						1		1
3b						1	1	2
3c	2					1		3
5b	1							1
6a	38	14					4	56
6b	14	3				2	1	20
6c	2			1	1	1		5
6d	2				1	1		4
6e			1	1	9		1	12
6e					12			12
6f	18				3	3		24
6g	6	1				2		9
6h	1				1			2
7a				1		1		2
7b					1	1		2
Total	88	18	1	4	28	16	9	164

Table 5. High-imposed Structure Sessions Hosted Desmond

In the low-imposed structure environment, there were four (sub)types of appropriation moves for which there were substantial differences in the number of occurrences between the hosts (see Table 2). In sessions hosted by Desmond, there were substantially more occurrences of substitutions of structures at hand with unrelated opposing structures (Subtype 2c), combining of contrary structures (Subtype 3b), and indirectly rejecting the appropriation of a structure (Subtype 8b). On the other hand, for sessions hosted by Emmett, there were substantially more occurrences of explanations of the meaning of a structure, or how the structure should be used (Subtype 6a). The data expressed in Tables 7 and 8 provide analysis from a perspective of these four (sub)types of appropriation moves. Among the four (sub)types mentioned, there were more interactions between individual group members (member-to-member) in sessions hosted by Desmond than Emmett. Also, there was more interaction among and between the group members that excluded the chauffeur (as a proportion the total interaction) for (sub)type 2c and 3b appropriation moves in sessions hosted by Desmond than Emmett. On the other hand, there were more occurrences of appropriation moves that defined the structure—(sub)type 6a—in sessions hosted by Emmett with group members as the source of most of that activity. These findings from the source/target analysis reflect the observed impression that the group members were more likely to, and perhaps more comfortable with, attempting to work with the technology in sessions hosted by Desmond while the group members were more concerned about making sure they used the GSS in a prescribed manner, and perhaps less comfortable working with the technology, in sessions hosted by Emmett.

CONCLUSION

This paper has introduced a typology and coding scheme for identifying the source and target of appropriation moves. This scheme is intended to complement the DeSanctis and Poole (1994) appropriation moves typology and illuminates deeper sources of structure that examination of appropriation moves alone does not reveal. It has been shown how the notion of the source/target scheme emerged from an analysis of appropriate and illustrative examples of the value of the coding scheme have provided.

	Combinations of Source and Target							
Type	H2G	H2M	G2H	G2G	M2H	M2G	M2M	Total
1a	1					1		2
2c							1	1
3a	2	1		2		1		6
3b	2			1		2	5	10
3c	1							1
6a	10	14					2	26
6b	6					5	2	13
6d	1	2					1	4
6e					21	2	1	24
6e					5			5
6f	2	1	1	1	1	6		12
6g	2			2	2	2		8
6h					2			2
7b						2		2
8a	1							1
Total	28	18	1	6	31	21	12	117

Table 6. High-imposed Structure Sessions Hosted Emmett

	Combinations of Source and Target								
Type	H2G	H2M	G2H	G2G	G2M	M2H	M2G	M2M	Total
2c	2		1	3		9	16	2	34
3b				6		4	5	3	18
6a	3	1		2	1		18	6	31
8b			1	3	5		2	3	14
Total	5	1	2	14	6	13	41	14	96

Table 7. Low-imposed Structure Sessions Hosted Desmond

	Combinations of Source and Target								
Type	H2G	H2M	G2H	G2G	G2M	M2H	M2G	M2M	Total
2c	1			7		2	11	1	22
3b						3	4		7
6a	5	4		5	1	4	23	4	46
8b				1	3		1		5
Total	6	4		13	4	9	39	5	80

Table 8. Low-imposed Structure Sessions Hosted Emmett

The next step is to further validate the typology and coding scheme and to use it in analyses in differing group and organizational contexts. While not yet addressed in this paper, some difficulty arose when attempting to apply the codes to the former study of appropriation moves. For one, the scheme as presently constituted does not seem to consider all possible sources and targets. For instance, there is no means to accommodate utterances that are directed at no one but may still represent appropriation. In such instances, the target was coded as intended to be the group rather than undirected. Also, there is no code which considers an interaction with more than one member, but less than the entire group. Such interactions could reveal attempts to build confederacies within a group or similar actions.

Overall though, this paper has shown the value of a method of identifying the source and target of appropriation moves and the insight it provides of the complexity of interaction that underlies structuration.

REFERENCES

1. Blumer, H. (1969) Symbolic Interactionism: Perspective and method, Prentice-Hall, Englewood Cliffs, NJ.
2. Bowen, G.A. (2006) Grounded theory and sensitizing concepts, *International Journal of Qualitative Methods*, 5, 3, 1-9.
3. Chudoba, K.M. (1999) Appropriations and patterns in use of group support systems, *The DATA BASE for Advances in Information Systems*, 30, 3/4, 131-148.
4. DeSanctis, G., and Poole, M.S. (1994) Capturing the complexity in advanced technology use: Adaptive structuration theory, *Organization Science*, 5, 2, 121-147.
5. Giddens, A. (1984) The constitution of society, University of California Press, Los Angeles.
6. Gopal, A. and Prasad, P. (2000) Understanding GDSS in symbolic context: Shifting the focus from technology to interaction, *MIS Quarterly*, 24, 3, 509-546.
7. McGrath, J.E. (1984) Groups: Interaction and performance, Prentice-Hall, Englewood Cliffs, NJ.
8. Miller, D.W, (under review) Imposed structure effects in GSS appropriation, *Journal of the Association for Information Systems, Special Issue on the Scholarship of Gerry DeSanctis*.
9. Poole, M.S., and DeSanctis, G. (1992) Microlevel structuration I computer-supported group decision making, *Human Communication Research*, 19, 1, 5-49.
10. Orlikowski, W.J. (1992) The duality of technology: rethinking the concept of technology in organizations, *Organization Science*, 3, 3, 398-427.
11. Orlikowski, W.J. (2000) Using technology and constituting structures: A practice lens for studying technology in organizations, *Organization Science*, 11, 4, 404-428.